



PATENT
Attorney Docket No.: 20174C-004900US
CIT No.: 3484
UCB No.: B02-026

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Quake et al.

Application No.: 09/887,997

Filed: June 22, 2001

For: HIGH THROUGHPUT
SCREENING OF CRYSTALLIZATION
OF MATERIALS

Examiner: Unassigned

Art Unit: 1725

INFORMATION DISCLOSURE
STATEMENT UNDER 37 CFR §1.97 and
§1.98

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The references cited on attached form PTO/SB/08A and PTO/SB/08B are being called to the attention of the Examiner. Copies of the references are enclosed. It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information, and no inference should be made that the information and references cited are, or are considered to be material to patentability because they are in this statement. No inference should be made that the information and references cited are prior art merely because they are in this statement.

Applicant believes that no fee is required for submission of this statement, since it is being submitted prior to the first Office Action. However, if a fee is required, the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,



Kent J. Tobin
Reg. No. 39,496

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| First Named Inventor | Quake |
| Group Art Unit | 1725 |
| Examiner Name | Unassigned |
| Attorney Docket Number | 20174C-004900US |

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FOREIGN PATENT DOCUMENTS

| Examiner Initials* | Cite No. ¹ | Foreign Patent Document | | | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T ⁶ |
|-----------------------|--------------------------|-------------------------|---------------------|--------------------------------------|---|--|--|----------------|
| | | Office ³ | Number ⁴ | Kind Code ⁵ (if known) | | | | |
| | AY | WO | 00/60345 | A1 | | 10-12-2000 | | |
| | AZ | WO | 99/17093 | A1 | | 04-08-1999 | | |
| | BA | WO | 98/07069 | A1 | | 02-19-1998 | | |
| | BB | EP | 999 055 | A2 | | 10-05-2000 | | |
| | BC | EP | 845 603 | A1 | | 06-03-1998 | | |
| | BD | EP | 829 360 | A2 | | 03-18-1998 | | |
| | BE | EP | 779 436 | A2 | | 06-18-1997 | | |
| | BF | EP | 706 004 | A2 | | 04-10-1996 | | |
| | BG | EP | 703 364 | A1 | | 03-27-1996 | | Abstr. on LY |
| | BH | EP | 592 094 | A2 | | 04-13-1994 | | |
| | BI | GB | 2 308 460 | A | | 06-25-1997 | | |
| | BJ | GB | 2 155 152 | A | | 09-18-1985 | | |
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OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

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|------------------------|--------------------------|---|----------------|
| | BK | Ahn et al., "Fluid Micropumps Based on Rotary Magnetic Actuators," <u>Proceedings of 1995 IEEE Micro Electro Mechanical Systems Workshop (MEMS '95)</u> , held in Amsterdam, Netherlands on 1/29-2/2/95, pgs. 408-412 (1995). | |
| | BL | Benard et al., "A Titanium-Nickel Shape-Memory Alloy Actuated Micropump," <u>Proceedings of Transducers '97</u> , 1997 International Conference on Solid-State Sensors and Actuators, held in Chicago, IL, 6/16-19/1997, 1:361-364 (1997). | |
| | BM | Brechtel et al., "Control of the electroosmotic flow by metal-salt-containing buffers," <u>J Chromatography A</u> , 716:97-105 (1995). | |
| | BN | Bryzek et al., "Micromachines on the march," <u>8045 IEEE Spectrum</u> , 31(5):20-31 (1994). XP 000456261 | |
| | BO | Buchaillet et al., "Silicon Nitride Thin Films Young's Modulus Determination by an Optical Non-Destructive Method," <u>Jpn. J. Appl. Phys.</u> , 36 Pt. 2(6B):L794-L797 (1997). | |
| | BP | Chiu et al., "Patterned deposition of cells and proteins onto surfaces by using three-dimensional microfluidic systems", <u>PNAS</u> , 97(6):2408-2413 (2000). | |
| | BQ | Chou et al., "A microfabricated device for sizing and sorting DNA molecules," <u>PNAS</u> , 96:11-13 (1999). | |
| | BR | Delamarche et al., "Patterned Delivery of Immunoglobulins to Surfaces Using Microfluidic Networks," <u>Science</u> , 276:779-781 (1997). | |
| | BS | Duffy et al., "Rapid Prototyping of Microfluidic Systems in Poly(dimethylsiloxane)", <u>Analytical Chemistry</u> , 70(23):4974-4984 (1998). | |
| | BT | Duffy et al., "Rapid prototyping of microfluidic switches in poly(dimethyl siloxane) and their actuation by electro-osmotic flow," <u>J. Micromech. Microeng.</u> , 9:211-217 (1999). | |
| | BU | Duffy et al., "Patterning Electroluminescence Materials with Feature Sizes as Small as 5 µm Using Elastomeric Membranes as Masks for Dry Lift-Off," <u>Adv. Mater.</u> , 11(7):546-552 (1999). XP-000849014 | |
| | BV | Effenhauser et al., "Integrated Capillary Electrophoresis on Flexible Silicone Microdevices: Analysis of DNA Restriction Fragments and Detection of Single DNA Molecules on Microchips," <u>Anal. Chem.</u> , 69(17):3451-3457 (1997). | |
| | BW | Effenhauser et al., "Integrated chip-based capillary electrophoresis," <u>Electrophoresis</u> , 18:2203-2213 (1997). | |

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|---------------------|-----------------------|---|----------------|
| | BX | Fahrenberg et al., "A microvalve system fabricated by thermoplastic molding," <u>J. Micromech. Microeng.</u> , 5:169-171 (1995). | |
| | BY | Fu et al., "A microfabricated fluorescence-activated cell sorter," <u>Nature Biotechnology</u> , 17:1109-1111 (1999). | |
| | BZ | Gass et al., "Integrated flow-regulated silicon micropump," <u>Sensors and Actuators A</u> , 43335-338 (1994). | |
| | CA | Gerlach, T., "Pumping Gases by a Silicon Micro Pump with Dynamic Passive Valves," <u>Proceedings of Transducers '97</u> , 1997 International Conference on Solid-State Sensors and Actuators, held in Chicago, IL, 6/16-19/1997, 1:357-360 (1997). | |
| | CB | Goll et al., "Microvalves with bistable buckled polymer diaphragms," <u>J. Micromech. Microeng.</u> , 6:77-79 (1996). | |
| | CC | Graveson et al., "Microfluidics—a review", <u>J. Micromech. Microeng.</u> 3:168-182 (1993). | |
| | CD | Harrison et al., "Micromachining a Miniaturized Capillary Electrophoresis-Based Chemical Analysis System on a Chip," <u>Science</u> , 261:895-897 (1993). | |
| | CE | Hornbeck et al., "Bistable Deformable Mirror Device," <u>Spatial Light Modulators and Applications 1988 Technical Digest Series, Volume 8</u> , Postconference Edition, Summaries of papers presented at the Spatial Light Modulators and Applications Topical Meeting, June 15-17, 1988, Optical Society of America, pgs. 107-110. | |
| | CF | Hosokawa et al., "Handling of Picoliter Liquid Samples in a Poly(dimethylsiloxane)-Based Microfluidic Device," <u>Anal. Chem.</u> , 71(20):4781-4785 (1999). | |
| | CG | Ikuta et al., "Three dimensional micro integrated fluid systems (MIFS) fabricated by stereo lithography," <u>IEEE Kyushu Institute of Technology</u> , pgs. 1-6 (1994). | |
| | CH | Jacobson et al., "High-speed separations on a microchip," <u>Anal. Chem.</u> , 66(7):1114-1118 (1994). | |
| | CI | Jacobson et al., "Microfluidic Devices for Electrokinetically Driven Parallel and Serial Mixing," <u>Anal. Chem.</u> , 71(20):4455-4459 (1999). | |
| | CJ | Jerman, H., "Electrically-Activated, Normally-Closed Diaphragm Valves," <u>Proceedings of Transducers '91</u> , 1991 International Conference on Solid-State Sensors and Actuators, pages 1045-1048 (1991). | |

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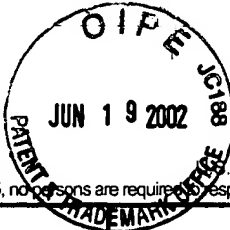
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|------------------------|--------------------------|---|----------------|
| | CK | Jung et al., "Chemical and Physical Interactions at Metal/Self-Assembled Organic Monolayer Interfaces," <u>Critical Reviews in Solid State and Material Sciences</u> , 19(1):2-10 (1994). | |
| | CL | Kenis et al., "Microfabrication Inside Capillaries Using Multiphase Laminar Flow Patterning," <u>Science</u> , 285:83-85 (1999). | |
| | CM | Kopp et al., "Chemical Amplification: Continuous-Flow PCR on a Chip", <u>Science</u> , 280:1046-1048 (1998). | |
| | CN | Kuhn et al., "Silicon Charge Electrode Array for Ink Jet Printing", <u>IEEE Transactions on Electron Devices</u> , ED-25(10):1257-1260 (1978). | |
| | CO | Lin et al., "Free-Space Micromachined Optical Switches for Optical Networking," <u>IEEE J. Selected Topics in Quantum Electronics</u> , 5(1):4-9 (1999). | |
| | CP | Lötters et al., "The mechanical properties of the rubber elastic polymer polydimethylsiloxane for sensor applications," <u>J. Micromech. Microeng.</u> , 7:145-147 (1997). | |
| | CQ | Lucy et al., "Characterization of the Cationic Surfactant Induced Reversal of Electroosmotic Flow in Capillary Electrophoresis," <u>Anal. Chem.</u> , 68:300-305 (1996). | |
| | CR | Maluf, N., <u>An Introduction to Microelectromechanical Systems Engineering</u> , Artech House Publishers, Boston London pages 42-45. | |
| | CS | Markx et al. "Applications of dielectrophoresis in biotechnology," <u>Tibtech</u> , 15:426-432 (1997). | |
| | CT | Muller et al., "Surface-Micromachined Microoptical Elements and Systems," <u>Proceedings of IEEE</u> , 86(8):1705-1720 (1998). | |
| | CU | Olsson et al., "Simulation Studies of Diffuser and Nozzle Elements for Valve-less Micropumps," <u>Proceedings of Transducers '97</u> , 1997 International Conference on Solid-State Sensors and Actuators, held in Chicago, IL, 6/16-19/1997, 2:1039-1042 (1997). | |
| | CV | Qin et al., "Elastomeric Light Valves**", <u>Adv. Mater.</u> , 9(5):407-410 (1997). XP-000683891 | |
| | CW | Qin et al., "Photolithography with transparent reflective photomasks," <u>J. Vac.Sci. Technology</u> , 16(1):98-103 (1998). | |
| | CX | Rapp. R., "LIGA micropump for gases and liquids," <u>Sensors and Actuators A</u> , 40:57-61 (1994). | |

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| | CY | Roylance et al., "A Batch-Fabricated Silicon Accelerometer", <u>IEEE Transactions on Electron Devices</u> , ED-26(12):1911-1917 (1979). | |
| | CZ | Schasfoort et al., "Field-Effect Flow Control for Microfabricated Fluidic Networks," <u>Science</u> , 286:942-945 (1999). | |
| | DA | Schueller et al., "Fabrication of glassy carbon microstructures by soft lithography," <u>Sensors and Actuators</u> , 72(2):125-139 (1999). | |
| | DB | Shoji, S., "Fluids for Sensor Systems", <u>Topics in Current Chemistry</u> , 194:162-188 Springer Verlag Berlin Heidelberg (1998). | |
| | DC | Shoji et al., "Smallest Dead Volume Microvalves for Integrated Chemical Analyzing Systems," <u>Proceedings of Transducers '91</u> , 1991 International Conference on Solid-State Sensors and Actuators, pages 1052-1055 (1991). | |
| | DD | Smits, J.G., "Piezoelectric Micropump with Three Valves Working Peristaltically", <u>Sensors and Actuators</u> , A21-A23:203-206 (1990). | |
| | DE | Sohn et al., "Capacitance cytometry: Measuring biological cells one by one," <u>PNAS</u> , 97(20):10687-10690 (2000). | |
| | DF | Tufte et al., "Silicon Diffused-Element Piezoresistive Diaphragms," <u>J. Appl. Phys.</u> , 33(11):3322-3327 (1962). | |
| | DG | Van der Pol et al., "Micro Liquid Handling Devices - A Review", <u>Micro Systems Technologies</u> , 90:799-805 (1990). | |
| | DH | Vieider et al., "A Pneumatically Actuated Micro Valve with a Silicone Rubber Membrane for Integration with Fluid-Handling Systems," <u>Proceedings of Transducers '95</u> , the 8th International Conference on Solid-State Sensors and Actuators and Eurosensors IX, held in Stockholm, Sweden on 6/25-29/95, 2:284-286 (1995). | |
| | DI | Washizu et al., "Molecular Dielectrophoresis of Biopolymers," <u>IEEE Transactions on Industry Applications</u> , 30(4):835-843 (1994). | |
| | DJ | Xia et al., "Complex Optical Surfaces Formed by Replica Molding Against Elastomeric Masters," <u>Science</u> , 273:347-349 (1996). | |
| | DK | Xia et al., "Soft Lithography," <u>Angew. Chem. Int. Ed.</u> 37:551-575 (1998). | |
| | DL | Xia et al., "Micromolding of Polymers in Capillaries: Applications in Microfabrication," <u>Chemistry of Materials</u> , 8(7):1558-1567 (1996). | |

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|---------------------|-----------------------|---|----------------|
| | DM | Xia et al., "Micromolding in Capillaries: Applications in Material Science," <u>J. American Chemical Society</u> , 118:5722-5731 (1996). | |
| | DN | Yang et al., "A Mem Thermopneumatic Silicone Membrane Valve", Proceedings of IEEE 10 th Annual International Workshop on MicroElectro Mechanical Systems, <u>Sensors and Actuators</u> , A64(1):101-108 (1998). | |
| | DO | Yang et al., "A MEMS Thermopneumatic silicone Membrane Valve," <u>Proceedings of the IEEE 10th Annual Workshop of Micro Electro Mechanical Systems Workshop (MEMS '97)</u> , held 1/26-30/97 in Nagoya, Japan, pages 114-118 (1997). | |
| | DP | Yazdi et al., "Micromachined Inertial Sensors," <u>Proceedings of IEEE</u> , 86(8):1640-1659 (1998). | |
| | DQ | Young et al., "Contoured elastic-membrane microvalves for microfluidic network integration," <u>J. Biomechanical Engineering</u> , 121:2-6 (1999). | |
| | DR | Zengerle et al., "A Micro Membrane Pump with Electrostatic Actuation," <u>1992 IEEE Conf. on Micro Electro Mechanical Systems</u> , held 2/4-7/92 in Travemunde Germany, pgs. 19-24. | |
| | DS | Zengerle et al., "Performance Simulation of Microminiaturized Membrane Pumps," from 7th International Conference on Solid-State Sensors and Actuators held 6/7-10/93 in Yokohama Japan, pages 106-109. | |
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